



US008957079B2

(12) **United States Patent**  
**Honigberg et al.**

(10) **Patent No.:** **US 8,957,079 B2**  
(45) **Date of Patent:** **\*Feb. 17, 2015**

(54) **INHIBITORS OF BRUTON'S TYROSINE KINASE**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **13/654,173**

(22) Filed: **Oct. 17, 2012**

(65) **Prior Publication Data**  
US 2014/0128413 A1 May 8, 2014

**Related U.S. Application Data**

(60) Continuation of application No. 13/542,440, filed on Jul. 5, 2012, which is a continuation of application No. 13/479,053, filed on May 23, 2012, now Pat. No. 8,697,711, which is a continuation of application No. 13/472,292, filed on May 15, 2012, now Pat. No. 8,691,546, which is a continuation of application No. 13/450,158, filed on Apr. 18, 2012, which is a continuation of application No. 13/361,733, filed on Jan. 30, 2012, now Pat. No. 8,399,470, which is a continuation of application No. 13/340,556, filed on Dec. 29, 2011, which is a continuation of application No. 13/340,409, filed on Dec. 29, 2011, which is a continuation of application No. 13/357,719, filed on Dec. 22, 2011, which is a continuation of application No. 13/328,718, filed on Dec. 16, 2011, now Pat. No. 8,476,284, which is a continuation of application No. 13/312,606, filed on Dec. 6, 2011, now Pat. No. 8,497,277, which is a continuation of application No. 13/249,066, filed on Sep. 29, 2011, which is a continuation of application No. 12/356,498, filed on Jan. 20, 2009, now Pat. No. 8,088,781, which is a division of application No. 11/617,645, filed on Dec. 28, 2006, now Pat. No. 7,514,444.

(60) Provisional application No. 60/828,590, filed on Oct. 6, 2006, provisional application No. 60/826,720, filed on Sep. 22, 2006.

(51) **Int. Cl.**  
**A01N 43/90** (2006.01)  
**A61K 31/519** (2006.01)  
**C07D 487/00** (2006.01)  
**C07D 487/04** (2006.01)  
**A61K 31/00** (2006.01)  
**A61K 45/06** (2006.01)  
**A61K 9/48** (2006.01)

(52) **U.S. Cl.**

CPC ..... **C07D 487/04** (2013.01); **A61K 31/00** (2013.01); **A61K 31/519** (2013.01); **A61K 45/06** (2013.01); **A61K 9/4825** (2013.01)

USPC ..... **514/262.1**; 544/262

(58) **Field of Classification Search**

None

See application file for complete search history.

(56)

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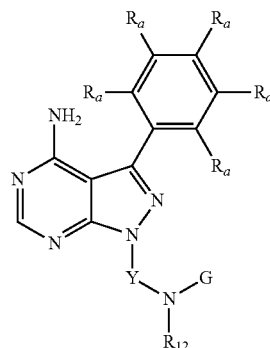
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(57)

**ABSTRACT**

Disclosed herein are compounds that form covalent bonds with Bruton's tyrosine kinase (Btk). Also described are irreversible inhibitors of Btk, such as those having the structure:



Methods for the preparation of the compounds are disclosed. Also disclosed are pharmaceutical compositions that include the compounds. Methods of using the Btk inhibitors are disclosed, alone or in combination with other therapeutic agents, for the treatment autoimmune diseases or conditions, heteroimmune diseases or conditions, cancer, including lymphoma, and inflammatory diseases or conditions.

**12 Claims, 8 Drawing Sheets**